The Birds of Yap, Western Caroline Islands

HARVEY I. FISHER[1]

THE YAP GROUP of islands, which lies about 450 miles southwest of Guam and 125 miles northeast of the Palaus, is composed of four main islands: Rumung, Map, Gagil-Tomil, and Yap. There are several islets in the lagoon between Yap and Tomil islands.

The highest elevation (585 feet) is in the north-central part of Yap Island (Fig. 1). Except for this hilly area, the rest of Yap Island is below 200 feet. All of Gagil-Tomil is below the 200-foot elevation, and the highest parts of Map and Rumung are from 250 to 300 feet above sea level. The greatest length of the group is about 16 miles and the greatest width is 6.5 miles.

Ulithi atoll is the nearest land mass, lying about 90 miles to the northeast. To the southwest are the Palaus. Thus, Yap lies in a chain of islands from the Palaus in the south to the Marianas in the north. None of the islands in the chain is widely separated from the others. Furthermore, to the east is the whole group of Caroline Islands. Because these islands seem to form a perfect series of "stepping stones" for the movement of plants and animals from the southwest Pacific to the north Pacific through the Marianas and eastward through the Carolines to the central Pacific Ocean, it was deemed desirable to study birds of Yap, especially since the extensive work of the Whitney-South Seas Expeditions did not include Yap, and no modern collections of birds from this area are known.

Preliminary investigation and collections were made on Yap from July 28 to August 24, 1946. A total of 148 vertebrate specimens were taken: 17 amphibians, 28 reptiles, 9 mammals, and 94 birds. No attempt was made to collect large series of any species; rather an attempt was made to secure representatives of all species present. Records of the reptiles and amphibians taken have been published (Fisher, 1948).

The University of Hawaii sponsored this trip. I wish to acknowledge the aid of the United States Navy in furnishing transportation and other facilities. In particular, I wish to thank Captain O. M. Murphy, United States Navy Commander of the Yap Area, for use of various facilities at Yaptown and for his interest in the project. I also want to thank Mr. Eveni Levi of Tutuila, American Samoa, who accompanied me from Honolulu; he helped greatly in many ways. Dr. Ernst Mayr has checked the identification of all species discussed and has made critical taxonomic comments, many of which are included in the species accounts.

It is no longer possible for me to continue these studies. Hence, it seems worth while to put on record the observations of this brief survey.

As indicated above, the islands are relatively low. They are almost completely covered with vegetation. Yap and Rumung show a similar zonation of vegetation. On the inner side (toward the lagoon) these islands have extensive swampy areas, and mangroves of two kinds form dense thickets at the water's edge. On the outer side the islands have large areas of shallow water inside the coral reef. For the most part, these have coral and rock substrata with little mud. At the upper ends of the tidal swamps on the lagoon side are semi-open mudflats. Above these swamps or mudflats, or above the narrow beach on the sea side, the dense jungle starts immediately and continues upward to an

[1]Department of Zoology, University of Illinois, Urbana. Manuscript received April 28, 1949.

elevation of about 200 to 250 feet on the southern end of Yap Island; on the northern end of Yap Island the hilly regions have dense stands of trees, but here and there are open areas of grassland with scattered *Pandanus* trees. Most of the rolling region to the south is this same type of savanna. The central part of Rumung is much the same.

Perhaps because of their lower elevation, Map and Gagil-Tomil islands do not have these open areas. The usual swamps and mangroves are present as a fringe about the circumference, but tall trees cover most of the rest of the surface.

In the discussion of the species, the habitats will be mentioned as mangroves, swamps, jungle, or savanna, referring to the various situations described above. An asterisk indicates that specimens were taken.

Puffinus pacificus, Wedge-tailed Shearwater.*—Five were observed flying over the south entrance to Tomil Harbor.

Puffinus l'herminieri, Dusky Shearwater.—Only one was seen, at the north end of Rumung Island.

Phaethon lepturus, White-tailed Tropic Bird.—Twos and singles were observed several times over Map Island.

Fregata ariel, Least Man-o'-War Bird.—Observed at close range at Yaptown (one bird) and at Balabat (three), August 6 and 13, respectively. Nine flew over Balabat on August 15. Natives reported that the species sometimes nested on Yap Island. The bird is closely associated with native traditions and customs, such as ceremonial dances, in which its feathers are used as ornaments. Identification was made of one roughed-out skin used as a headdress.

Sterna fuscata, Sooty Tern.—On July 30, six birds were resting on the beach at the north end of Rumung Island.

Sterna lunata, Gray-backed Tern.*—One collected from a flock of nine *Thalasseus bergii* off Orila, Map Island.

Thalasseus bergii, Crested Tern.*—Nine individuals were observed on tops of pilings of an abandoned fish trap off Orila, Map Island.

Gygis alba candida, Fairy Tern.*—This species was abundant on all the islands in those places where there were tall trees some distance apart. It was not seen in the deep jungle growth or in the savanna areas and was most frequently observed in the tall breadfruit, banyan, and coconut trees and in tall, isolated mangrove trees in the swamps. I did not find it in low shrubs such as are used by *G.a. rothschildi* in the western Hawaiian islands.

Also in contrast to *rothschildi, candida* was very noisy at night. This constant calling was observed on three occasions, at 9:00, 10:30 P.M., and 12:15 A.M.

The fairy tern, like the man-o'-war bird, is frequently used as an ornament of dress. Three natives had outlines of this tern tattooed on their shoulders.

Anous stolidus pileatus, Common Noddy.*—The noddy was found only on Tarang Island in Tomil Harbor. Here, an estimated 250 were seen, usually in the tops of pandanus, breadfruit, and chestnut trees. Old nests were found in the top whorls of pandanus trees, 12 to 18 feet from the ground. No nests were observed in higher or lower sites. Egg shells were found on the ground, indicating that nesting had occurred not long before. Some nests were apparently under construction, for they contained in their walls seaweed that was still green. Furthermore, two birds carrying strands of seaweed were observed flying into nests.

Pluvialis dominica fulva, Pacific Golden Plover.*—In late July an occasional single or pair was observed. By August 15, they were quite numerous, 15 to 25 birds in 150 yards of beach, along the beaches, tidal flats, and marshes, but they did not fly or feed in flocks. They were also abundant in open areas of savanna and around the Nif airfield.

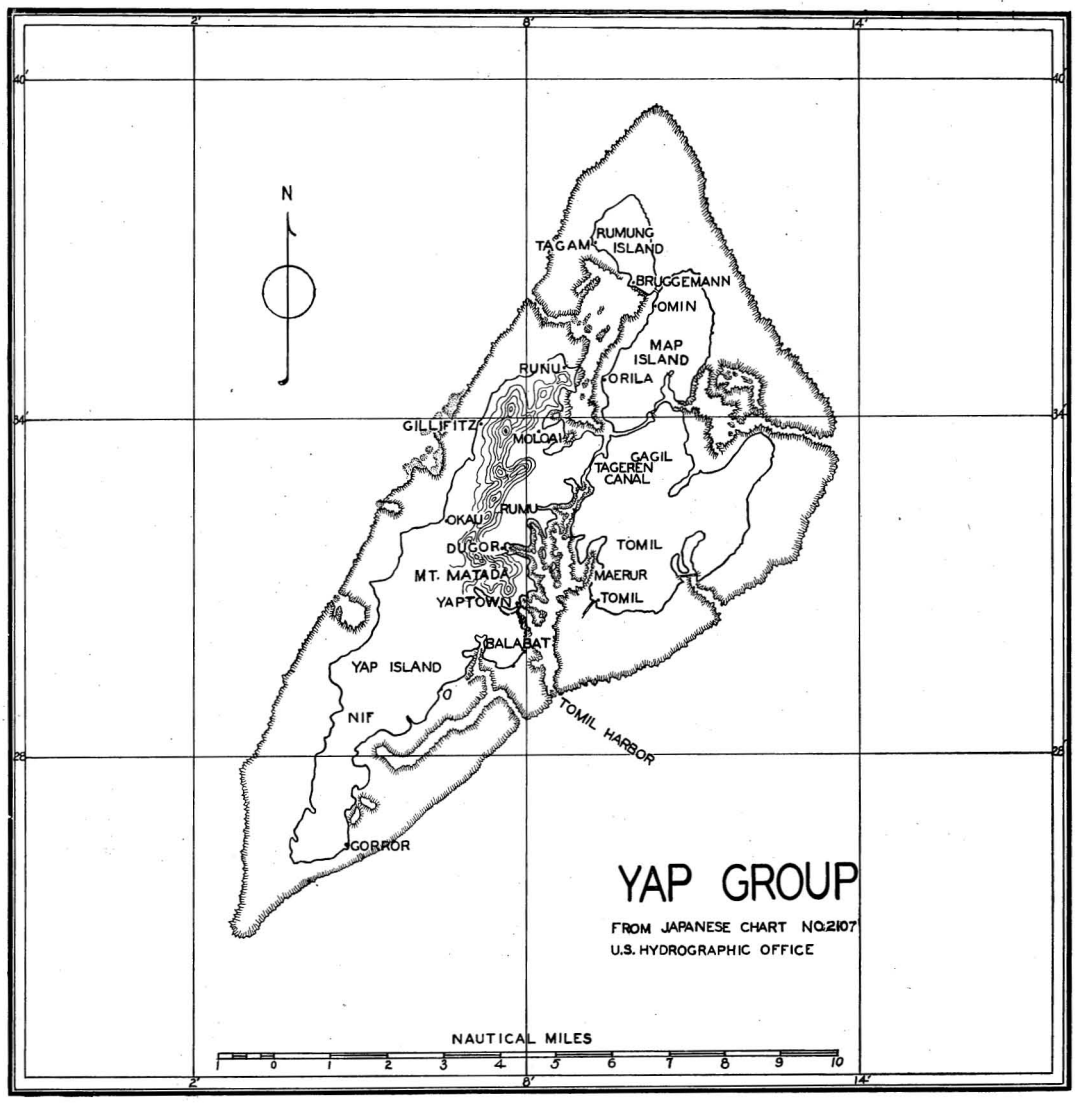

FIG. 1. The Yap Group of islands.

Charadrius mongolus, Mongolian Dotterel.*—One was collected on the mud of a small taro patch in the jungle ½ mile west of Balabat.

Numenius phaeopus variegatus, Whimbrel.*—Singles, pairs, and groups of three were commonly found on mudflats where there was no vegetation. Three were observed feeding on the grass-covered airstrip at Nif. No change in numbers was observed during our stay.

Numenius tahitiensis, Bristle-thighed Curlew.*—Only two singles were observed, both on rocky beaches.

Tringa glareola, Wood Sandpiper.*—One was collected on a mudflat at Moloai, Yap Island, August 10. No others were seen.

Heteroscelus incanus brevipes, Wandering Tatler.*—As would be expected, several individuals were seen on rocky stretches of beach, but they were just as numerous on small mudflats and around small patches of

FIG. 2. Dense jungle growth, 150 feet elevation, Dugor, Yap Island. Habitat of *Rhipidura, Monarcha,* and *Myzomela.*

taro in the dense jungle. One was observed in an open area of the savanna region.

Arenaria interpres, Turnstone.*—One flock of five and one flock of two were observed on Yap Island, August 6 and 16, respectively.

Crocethia alba, Sanderling.*—Occasional individuals were found along the beaches.

Demigretta sacra, Reef Heron.—Of 14 individuals observed on beaches and mudflats from July 28 to August 16, 11 were dark gray, one was light gray, and two were white in color.

Nycticorax caledonicus, Rufous Night Heron.—Two were in the edge of jungle adjoining the Nif airfield.

Ixobrychus sinensis, Chinese Least Bittern.*—These bitterns were most numerous around the water-filled bomb craters in the Nif airfield; on one occasion, 49 were seen in 4 hours. However, individuals were present around permanent and temporary rain-filled depressions in all parts of the islands. Each taro patch, no matter how small, had at least one bittern. They were abundant in the mangroves, in places a bird every 100 yards. Mayr (1945: 285) stated that this species was mostly nocturnal. I found it usually active in the daytime—feeding, calling, and flying about from one pond to another. Its call was not heard at night.

Anas (superciliosa?).—The "dark, female mallard with white line above its eye," observed by Levi and me probably was *superciliosa.* It was on the saltwater lagoon just off Yaptown. Captain O. M. Murphy said that the birds were frequently seen around the craters in the Nif airfield and that they were present throughout the year, but I did not find them there.

Gallus gallus, Domestic Chicken.—A few semi-domestic fowl were found in the jungle near the native villages. I was told that before the war such feral chickens nested in many different places. During the naval blockade in the latter part of the war the Japanese military forces hunted down most of them for use as food.

Poliolimnas cinereus collingwoodi, White-browed Rail.*—Mathews, in 1939, described the subspecies, *micronesiae,* and stated that Micronesian specimens were intermediate between *collingwoodi* from the Philippines and specimens from Vulcan Island. Examination of 32 specimens of *"micronesiae"* and a series of *collingwoodi* failed to substantiate his remarks. Mayr (in litt.) stated, "To this subspecies *(collingwoodi)* belong also the specimens from Talaut Islands, Palau, Guam, and Ruk. There are some characters peculiar to each locality but the differences between populations of these islands

FIG. 3. Grassy swamp, 20 feet elevation, Rumu, Yap Island. Habitat of *Poliolimnas cinereus.*

are not sufficiently constant and conspicuous to permit separation from *collingwoodi.*"

These rails were present in all suitable taro patches or marshy areas that were investigated. They were not found in saltwater marshes but were present in marshes of brackish water less than 200 yards from the sea and only 2 to 5 feet above sea level. All areas found to be occupied by this species had three things in common: mudflats, shallow water (2 to 4 inches), and clumps of heavy marsh grasses.

Apparently the size of a taro patch has little to do with the number of rails present. I never found more than one pair in any isolated marsh or taro patch, and I investigated 13 such places, ranging in size from circular areas 50 feet in diameter to swamps containing 3 to 5 acres. A pair was collected from each of two smaller taro patches; during the following 3 weeks no rails were seen there, although the areas were visited every other day during that time. On two occasions individuals were flushed from dense grass some 50 yards from swampy areas. On both occasions the birds flew strongly and swiftly to cover in the swamp. I never saw this species more than 5 feet from heavy, grassy cover.

Two trips were made at night to areas in which rails fed in the daytime. In 4½ hours of observation no birds were seen and no calls were heard.

At Balabat, at 10:30 A. M., on August 11, I saw an adult run across a small opening in the middle of an abandoned taro patch overgrown with water grass. A few seconds later another adult followed; it was collected. When I retrieved the bird I found I had also collected a chick. At 2:30 P. M. on August 12 in a similar area, I watched two adults and a brood of four chicks feeding in water 1 inch deep. During the entire 40 minutes this group was watched, both adults kept their tails up in the air and jerked them vertically at 5-second intervals. They kept in a close group, except for occasional straying by a chick; when a chick strayed the parent called, *k-uk, k-uk, k-uk,* in contrast to the usual, hard, *kuk, kuk, kuk.* So near to each other did these birds stay that I was able to collect all six with a single shot from a 410-gauge shotgun at a distance of about 25 yards.

FIG. 4. Elevated trail in sea level swamp, Balabat, Yap Island. Habitat of *Ixobrychus* and *Poliolimnas.*

The adults were a male and a female. The chicks were covered with black down. Their legs were dull blue. The distal third of both the upper and lower mandibles was dirty-ivory in color; the middle third, extending proximally to the middle of the external nares, was black. The basal third was washed-yellow. The call of these chicks, whose body length was 2 inches, was much like that of day-old domestic chickens, but finer, shriller, and weaker.

Ducula oceanica monacha, Micronesian Pigeon.*—These were not numerous on the islands, but one could be certain of seeing five or six in a half-day. It was seldom seen in the savanna area, except at dusk when there was considerable movement between wooded regions. As a rule, the birds were first observed high in the barer branches of trees 30 to 60 feet in height, but one was collected while it rested on a nest some 20 feet from the ground in a breadfruit tree; the nest was old and empty. The call is a single *augh* or *ungh.*

FIG. 5. Typical taro patch swamp, Omin, Map Island. A pair of rails nested here.

Gallicolumba xanthonura, Ground Dove.*—Comparison of specimens from Yap and the Marianas revealed little significant difference. The only female from Yap was somewhat darker above and particularly darker below in the throat and breast; specimens from the Marianas are more rufous cinnamon in these parts of the body. Size seemed to be identical in the two series.

This species is uncommon on the island; I saw only 14 (singles, except for a male and a female collected together) in 4 weeks. It appeared to be limited to mangrove thickets in or near water and was not seen anywhere in the interior of Yap Island.

Rhipidura rufifrons versicolor, Rufous-fronted Fantail.*—Mayr (in litt.) wrote as follows:

The Yap race which I had not previously seen is more distinct from the races of the Marianas Islands than I had expected. The extensive, buffy, ochraceous wash of belly and flanks is missing. The well-defined, clear, white upper throat is another striking difference as are the gray-brown flanks. The upperparts are darker and more rufous with the contrast between rump and back much less pronounced. Actually, the Yap bird is, in the coloration of its underparts, much more similar to the Solomon Islands races and in particular to *brunnea* from Malaita Island. It differs from that race by the more extensive white tips on the tail feathers and broader white edges on the feathers of the breast and middle of the abdomen. The rufous zone on the lower back is more reduced. There is a more distinct grayish wash in the black portions of the tail feathers. The similarity is so striking that I wouldn't be surprised if Yap had actually been colonized from Malaita.

Although found on all the islands, they are most abundant on Tomil. The edges of low undergrowth in lowland jungles and the edges of mangrove swamps seemed to be favorite habitats, but a few were seen far back in the jungle. Without exception, the birds were found in twos or in family groups; three broods of nearly fledged young (three in each brood) were following pairs on August 11.

They are constantly on the move and are wary, but they, at this season at least, came in toward squeaking noises. They responded best to the sound of two pieces of seasoned wood being knocked together, as when ashes from a pipe were knocked out by hitting it against a gunstock. As one moved along a trail these birds frequently flew out ahead, displaying vigorously. They became most active just after sundown and before total darkness.

Monarcha godeffroyi, Monarch Flycatcher.*—Specimens collected showed much individual variation in extent of the black, brown, and white coloration. Two birds in brown coloration, similar to *M. takatsukae* from Tinian, were taken. Both were adult females, on the basis of degree of ossification of the skull and development of the ovaries; one was feeding nearly grown young. Immatures collected were dirty-black or brownish-black with dirty-white markings. Males were white-backed with white ventra, and the females had a white ring of varying extent about the neck.

On all islands of Yap, the species was abundant along the trails in heavy jungle. In this habitat the species was usually found 20 or more feet up in the vegetation, not in

FIG. 6. Sea level swamp, Balabat, Yap Island. Habitat of *Poliolimnas* and *Ixobrychus;* in surrounding mangroves *Gallicolumba xanthonura* was collected.

the low understory as was *Rhipidura.* However, this flycatcher was also observed perched on bare pandanus limbs (10 to 20 feet high) in the savanna region; here, it flew out after insects in typical flycatcher fashion. Mayr (1945: 92) noted that this seldom occurred in *Monarcha*; he also stated that the tail drooped vertically as the bird perched motionless. The tail was never drooped in the monarchs of Yap.

Aplonis opacus kurodai, Micronesian Starling.*—Three specimens from Yap agree fairly well with *orii* Takatsukasa and Yamashina from the Palaus, but the gloss on the birds from Yap seems to be more blue green, less bottle green; this may be due to slightly greater wear on the specimens from the Palaus. The bill seems slightly longer on the birds from Yap (Mayr, in litt.).

The species was abundant on all the islands in all types of cover except the savanna. Birds were most numerous, however, in the tops of high trees and were seldom, if ever, encountered in low, dense brush. The tops of coconut trees were much used as singing perches, and hau trees *(Hibiscus tiliaceus)* were frequented for their fruits. No nesting birds were found, but one juvenile was observed (August 7) begging and receiving food, and an adult was observed carrying food on August 16. As in other places, this species is in frequent conflict with other species; on Yap, *Myzomela cardinalis* and *Monarcha* were the chief victims of this conflict.

Myzomela cardinalis kurodai, Cardinal Honey-eater.*—It is unfortunate that the series of skins from Yap contained only one of a female, for the races are more clearly pronounced in the females. The one female agrees closely with an adult female *kobayashi* from Palau; both have distinct olive edges to the tail feathers, and the red is restricted to the top of the crown and does not extend to the nape; the comparative blackness of the scapulars in the Yap bird is perhaps due to its fresh plumage. The only difference between these two females is that the red of the crown and throat of the specimen from Yap is more cherry red, less scarlet, and there is a more pronounced zone without red between the upper throat and breast and between the crown and back. The wing and tail of the Yap race appear to be somewhat longer. The bill of the Yap birds appears to be longer than that of the Palau birds, but measurements do not confirm this visual impression. The edge of the newly molted primaries seems more olivaceous in Palauan than in Yap males. The under-tail coverts of birds from Yap seem blacker than in birds from Palau. On the basis of the specimens before me I would not be inclined to recognize *kurodai,* but it must be considered that the Yap series is in full molt. (Mayr, in litt.)

The honey-eaters were present in all suitable habitat on all islands. They were most abundant in low brush, no matter whether this brush was in the jungle, in otherwise open country, or in a mangrove swamp. In their brush habitat the birds appeared to be weak flyers, their fluttery flights seldom longer than 15 feet, but on August 21 one was observed over the center of Tomil Harbor, more than ½ nautical mile from land.

As a rule, they were observed in pairs, but on August 7 a brood of three was following

a pair. On August 10, a female (collected) was starting a nest in the outer tips of a branch some 10 feet from the ground. Another female (collected, but unfit for a specimen) was observed carrying food on August 10.

Zosterops conspicillata hypolais, Bridled White-eye.*—The Yap subspecies, *hypolais,* is strikingly different from all the other races of the species. It is by far the most grayish race of the species. The eye-ring is inconspicuous and the dark area under the eye is grayish rather than blackish. The white loral region is much reduced. The upperparts are gray, with a greenish tinge, most conspicuous on rump and crown. The underparts are somewhat like those of *rotensis* but slightly more yellowish, less buffy, particularly on the flanks. The size seems the same as in most other races of this species in which the wing varies between 55 and 58 millimeters in length in adult males. (Mayr, in litt.)

This species was usually confined to the undergrowth at the edge of the jungle. One could find it in numbers from 2 to 15 in almost every such area 100 yards long.

Rukia [Kubaryum] oleaginea, Large Yap White-eye.*—This species differs from the related *Zosterops conspicillata* by being larger, darker, and more brownish olive. "In general coloration it is remarkably similar to *sanfordi* from Ponape. It is somewhat darker, particularly on the crown, forehead, and lores. There is an extensive blackish zone in the malar region and under the eyes, which is barely indicated in *sanfordi.* The underparts also are darker and more grayish, while in *sanfordi* they are more brightly greenish buff. Rump and tail, as well as the edges of the primaries and secondaries, are duller. The legs are duller, more grayish horn color rather than yellow as in *sanfordi.* The two principal differences between the two species are, however, in the shape of the bill, which is nearly twice as long as in *sanfordi,* and in the eye-ring which is obsolete in *sanfordi.* The exposed culmen measures about 14 millimeters in *oleaginea* and over 20 in *sanfordi.*" (Mayr, in litt.)

In the month spent on Yap, only two individuals were observed; one on August 6, 1 mile northwest of Yaptown, Yap Island, and one on August 7, less than ¼ mile from the same area. One was in a bush overhanging a swamp in dense jungle, and the other was in low, thick underbrush 200 yards from a swamp.

Lonchura punctulata, Weaver-Finch.*—The three skins agree best with a series of the race *cabanisi* from the Philippines. They are also rather similar to the race *topela* from the Asiatic mainland but are distinguished from this subspecies by the fine barring on their flanks and by a less extensive brown area on the throat. (Mayr, in litt.)

This weaver-finch was found in all open and grassland areas on the islands. Flocks of 40 were observed in the shorter, dry grass of the savanna regions, and they were especially numerous in flocks of 5 to 20 birds along grassy roads and wide trails where they were feeding on seeds. Some immatures were begging for and receiving food on August 16.

This species probably was introduced on Yap.

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